AERIAL SURVEYS OF BIRDS ON THE NORTH SLOPE OF THE YUKON TERRITORY, SPRING 1985

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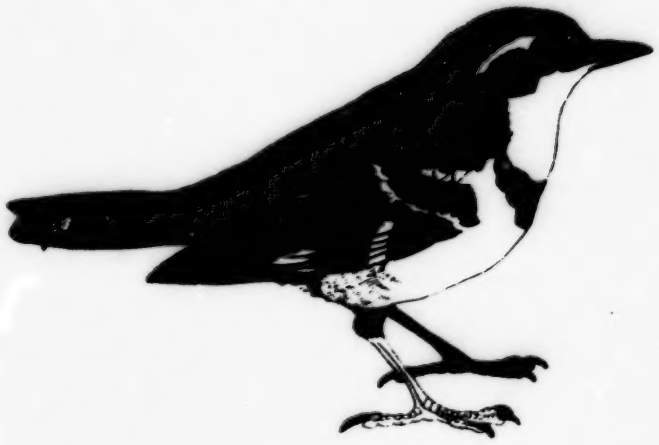

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AERIAL SURVEYS OF BIRDS ON THE NORTH SLOPE OF THE YUKON TERRITORY, SPRING, 1985

R. McKelvey

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ABSTRACT

Aerial surveys were conducted over the Yukon North Slope between 17 June and 3 July, 1985, to determine the breeding density of migratory birds, primarily waterfowl. Information is presented on the routes flown, densities of birds seen, and difficulties encountered. Three habitat types were recognized: upland tundra, coastal, and delta lowlands. Highest densities of birds were seen in parts of the coastal habitat, where sea ducks were beginning to concentrate prior to the molt. Delta lowlands had the highest densities of breeding birds in the first transect survey (15.7 birds/km^2) but low densities in the second transect survey (3.4 birds/km^2). Tundra habitat had relatively low densities in both transect surveys (4.6 and 4.5 birds/km^2, respectively). Schweinsburg (1974) and Dickson (1985) reported similar densities on parts of the North Slope.

RÉSUMÉ

Des inventaires aériens on été effectués sdans le nord du Yukon entre le 17 juin et le 3 juillet 1985 afin de déterminer la densité des oiseaux migrateurs, les canards en particulier. De l'information sur la localization des lignes de vol, sur les densités d'oiseaux observés et sur les difficultés encourues est presentée. Trois types d'habitats ont été identifiés: la Tundra intérieure, la Tundra côtière et les terres basses du delta. Les densités les plus élevées furent observées dans des sections de l'habitat côtier où les canards de mer avait débuter leur assemblement pré-mue. Les terres basses du Delta avaient les densités les plus élevées d'oiseaux nicheurs lors du premier inventaire (15.7 oiseaux/km^2) mais des densités beaucoup plus basses lors du deuxième inventaire (3.4 oiseaux/km^2). L'habitat de Tundra avait des densités d'oiseaux relativement basses bars des deux inventaires (4.6 et 4.5 oiseaux/km^2, respectivement). Schweinsburg (1974) et Dickson (1985) ont rapporté des densités similaires dans certaines sections du Nord du Yukon.

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INTRODUCTION

In 1985 two workshops were held to discuss the need for waterfowl surveys on the Yukon North Slope (CWS 1985). The North Slope was the target for those discussions for two reasons. First, it was known to be an important area for waterfowl (Cooperative Waterfowl Management Plan for the Yukon), but there was no data available to say how large the populations were nor what was happening to them. Second, the latter point was felt to be very imporant in light of settlement of the C.O.P.E. land claim. Status information on all wildlife populations would be required to effect the agreement. Following the workshop a project was proposed for 1985 that had the following objectives: 1) initiate spring arrival/pair surveys; 2) undertake a study of molting birds near Herschel Island; and 3) investigate the feeding and staging ecology of Snow Geese near Deep Creek.

This report contains the results of efforts made in 1985 towards meeting the first objective. Details of aerial surveys are presented, including routes, densities of birds seen and difficulties encountered during the study. Preliminary conclusions concerning the need for long term monitoring on the North Slope are also presented. A literature review and full analysis of the regional position on future work on the North Slope will appear separately (J.Hawkings, in prep.). In conjunction with the aerial surveys a ground based operation was also undertaken, near Whitefish Station West (68 54 N x 136 51 W). The results of that study will appear later in a separate report (Hawkings 1985).

Several people assisted with this survey. Thanks go to M. Dennington, D. Russell, J. Hawkings, L. Retfalvi, and T. Hayes for work on the survey or for logistics arrangements. The surveys were flown by B. Langevin of Aklak Air, Inuvik. J. Ostrik provided accommodation and equipment storage

facilities at the Inuvik Research Laboratory.

METHODS

One reconnaissance and two transect surveys were conducted between 17 June and 3 July 1985, on the North Slope. The routes flown and transect locations are shown in Table 1. The reconnaissance survey was flown at about 60 m (200 ft.) at cruising speeds (220 kmh) and attempted observations over a strip approximately 400 m wide (200 m on each side of the aircraft). The route of that survey was not accurately determined prior to departure. The approximate areas to be visited were known, but because it was to be a reconnaissance, fixed transects were not employed.

Table 1. Routes flown and transect locations for aerial surveys of waterfowl on the Yukon North Slope, June/July 1985.

Survey Date	Route
17 June	Inuvik - Shallow Bay - Tent Island - Whitefish Station - Shingle Pt. - Walking Pt. - Sabine Pt. - King Pt. - Phillips Bay - inland above fog - Roland Bay - landed at Lake east of Bloomfield (69 11 N x 138 31 W) - Deep Creek - Whitefish Station - Inuvik
27 June	Inuvik - Whitefish Station - Transects 1 - 8 - Pauline Cove (Herschel Is.) - Avadlek Spit - Transects 10 & 9 - Stokes Pt. - Sabine Pt. - Shingle Pt. - Whitefish Station.
3 July	Whitefish Station - Transects 2 - 5 - Trout Lake - Transects 6 - 10 - Pauline Cove - Demarcation Bay - Clarence Lagoon - Komakuk Beach -Nunaluk Spit - Catton Pt. - Stokes Pt. - Babbage R. - Kay Pt. - King Pt. - Sabine Pt. - 4 mile west of Shingle Pt. - Transect 1 - Tent Island - Whitefish Station.

Transect surveys were conducted at 60 m altitude, 140 kmh, and used a strip width of 200 m (100 m each side). Ten transects were laid out in a zigzag fashion across the coastal plane from Tent Island to Herschel Island

(see maps in Appendix 1 for transect locations). Each transect, except TR6 was 25 km long (16 miles) and was positioned so that the end points could easily be relocated. Transect 6 was 30 km long, to include Kay Point. As much as possible, transects crossed drainages at right angles, to avoid any biases in reported bird densities that might result from following drainages. Transect survey techniques were based on standard operating procedures for aerial surveys (USFWS and CWS 1977). Birds were recorded as being in or out of the transect; those outside the transect were not more than 800 m from the transect centre line.

On completion of the second transect survey a survey of the open shoreline was made from Clarence Lagoon to Shingle Point. The transect width and aircraft height were maintained as in other parts of the transect survey. Aircraft speed however, was at or above cruising speed, due to strong winds along the coast.

Observations were made from the right front seat and the left rear seat of the aircraft. A Cessna 206 was used for the first and third surveys, and a Cessna 185 was used for the second survey. All observations were recorded on tape. The times of some observations were also noted, when bird densities were low or when habitat types changed (e.g. open ocean to coastal plain). That allowed the exact relocation of the sighting later on maps.

RESULTS and DISCUSSION

Bird Populations Observed

During the reconnaisance survey the pack ice was on shore from Shingle Pt. west to Herschel Island, and most (75%) of the upland ponds were frozen. All ponds on the western portion of the Mackenzie delta near Whitefish Station were open and ice free. Bird densities were highest between the Blow and Walking Rivers, in Trent Bay (53.7 birds/km^2; Table 2)). Brant, Surf Scoters

and Glaucous Gulls, resting on the ice-free water of the bay, were the predominant species (Appenix 2 contains actual counts, by species). The density of birds seen on the inland leg of this survey was very low (1.6 birds/km^2).

Table 2. Total number of birds, distances flown, and bird densities seen on the aerial survey of 17 June 1985, Yukon North Slope.

Location	Total seen	Distance flown Miles	Kilometers	Density birds/km^2
Shallow Bay - Tent Is.	216	38	61	8.9
Shoalwater Bay	72	20	32	5.6
Blow R. - Walking R.	206	6	10	53.7
Walking R. - King Pt.	28	22	35	2.0
King Pt. - Phillips Bay	107	24	38	7.0
Inland from 69 22Nx139 08W to 60 09Nx138 33W	23	22	25	1.6

The results for the transect surveys have been separated into three habitat types: the upland portion above the coast; the coastal portion, which included some open water near the ice pack; and delta lowlands such as those seen at Whitefish Station and Phillips Bay. During the first transect survey the pack ice was offshore as far west as Stokes Pt. At Shingle Pt. the ice was about 800 m from shore and the inner lagoon was mostly ice free. From Stokes Pt. to Herschel Island the shore lead was less than 30 m wide, with another narrower lead (10 m) about 400 m from shore. Pauline Cove was ice-filled, but there was considerable open water on the east side of Avadlek Spit, to about Lopez Pt.

The highest density of birds, on the first transect survey, was seen on

the coastal portion of Transect 10, which encompassed Avadlek Spit (40.6 birds/km^2) (Table 3). That was a result of the large number of sea ducks present, which were presumably in pre-molt concentrations. Another coastal area of high density was seen on Transect 5, between Sabine Pt. and King Pt. The total number of birds, however, was very low, so the recorded density is not indicative of an important concentration point.

Lowland bird densities were much greater than those seen on the upland. The mean density of lowland areas near Tent Island (Transect 1), Whitefish Station (Transect 6) and Phillips Bay (Transect 7) was 15.7 birds/km^2 (SD=9.0, n=3). The mean density of birds on upland portions of all transects was 4.6 birds/km^2 (SD=4.4, n=10). Higher than average densities were seen on upland portions of Transects 6 and 7. The upland portion of Transect 6 was shorter than the upland portions of other transects, much of that transect being in the lowland of the Blow River valley. Although the number of birds seen in the upland portion of Transect 6 was not great (21 birds in 2.6 km^2; see Appendix 1), more were probably seen than might be expected, because of the proximity of the Blow River.

Upland densities on Transect 7 were inflated by the chance encounter of a small flock of shorebirds (35; see Appendix B). If they had not been seen, densities on this transect would have been similar to those on upland portions of the other transects.

Based on an extrapolation from the total number of birds seen on all transects on the first transect survey, it is possible to calculate the number of birds potentially present on the North Slope, at that time. Details of that calculation are shown in Table 4. Including coastal areas, where most birds were assumed to be premolting sea ducks, approximately 21,600 birds could have been present, of which 35% were waterfowl. Even though upland densities were low, significant numbers of waterfowl could have been present

Table 3. Density of birds seen on each transect from the second survey (27 June) of the Yukon North Slope, 1985. Figures are birds/km^2.

Transect number, habitat type and area surveyed (km^2)			Species						
			Loons	Swans	Geese	Ducks	All waterfowl	Others	All birds
1.	coast	0.6							0
	lowland	1.9	1.1	1.1	2.1	4.7	8.9	8.9	17.9
	upland	2.6				0.8	0.8		0.8
2.	coast	0.4				5.0	5.0	2.5	7.5
	upland	4.7	0.6			0.4	0.4	0.9	1.9
3.	upland	5.1	0.4	0.4		1.6	2.0	3.5	5.9
4.	coast	0.3							0
	upland	4.8				0.6	0.6	0.4	1.0
5.	coast	0.3	6.7			3.3	3.3		10.0
	upland	4.8	0.2			2.3	2.3	2.7	5.2
6.	coast	0.03	(33.3)*					(33.3)*	(66.7)*
	lowland	3.8		1.1	3.2	17.4	21.6	1.8	23.4
	upland	2.6		0.8		2.3	3.1	5.0	8.1
7.	lowland (Phillips Bay)	1.9	0.5			2.6	2.6	2.6	5.8
	upland	3.2				3.1	3.1	12.2	15.3
8.	coast	1.1							0
	upland	4.0	0.5			2.5	2.5		3.0
9.	coast	1.3							0
	upland	3.8				0.8	0.8	1.6	2.4
10.	coast (spits)	1.6	0.6			40.0	40.0		40.6
	upland	3.5				0.3	0.3	1.7	2.0

* based on only a total of 2 birds in 0.03 km^2 of water.

throughout the tundra.

Table 4. Possible number of birds present on the North Slope, based on data from the first transect survey, 27 June 1985.

	Coast		Lowland		Upland	
	Waterfowl	All birds	Waterfowl	All birds	Waterfowl	All birds
Total number of birds seen	65	73	29	137	62	170
Area surveyed (km^2)	5.6		7.6		39.1	
Density (birds/km^2)	11.6	13.0	3.8	18.0	1.6	4.3
Study area (km^2)	100		350		3200	
Estimated total birds present	1200	1300	1300	6300	5000	14000

On the second transect survey the ice had moved offshore as far west as Catton Pt., but was tight against the east side of Catton Spit. Workboat Passage was about 75% ice covered, but there was a variable shore lead west from the tip of Avadlek Spit to half way along Nunaluk Spit. Open water was also found behind Nunaluk Spit (Nunaluk Lagoon), at the mouth of Fish Creek, and in Clarence Lagoon. From Clarence Lagoon to Demaracation Pt., Alaska, the ice was shore fast.

On this survey the highest density over coastal habitat was seen on Transect 10 (199.4 birds/km^2) (Table 5). The density there was much higher than that recorded on the first transect survey. Because there was no measure of variability in either survey however, there is no way to say if that change was significant statistically. Subjectively, it seemed that there were many more flocks of sea ducks present on the second transect survey. As the molt period approached a greater concentration of birds would be expected. The

Table 5. Density of birds seen on each transect from the second transect survey (3 July) of the Yukon North Slope, 1985. Figures are birds/km^2.

Transect number, habitat type and area surveyed (km^2)			Species					
			Loons	Swans	Geese	Ducks	All waterfowl	Others	All birds
1.	coast	0.6							0
	lowland	1.9							0
	upland	2.6	0.8	1.9		2.3	4.2		5.0
2.	coast	0.4	5.0			25.0	25.0		30.0
	upland	4.7	1.3			1.5	1.5	0.6	3.4
3.	upland	5.1	1.4			1.6	1.6	0.8	3.7
4.	coast	0.3							0
	upland	4.8	0.2			0.6	0.6	0.4	1.2
5.	coast	0.3							0
	upland	4.8		0.6		0.2	0.8	1.7	2.5
6.	coast	0.03							0
	lowland	3.8		3.2		1.3	4.5	0.5	5.0
	upland	2.6	0.4					16.5	16.9
7.	lowland (Philips Bay)	1.9	2.1			0.5	0.5	2.6	5.3
	upland	3.2				0.2	0.2	1.3	1.6
8.	coast	1.1	1.8						1.8
	upland	4.0				1.5	1.5	2.0	3.5
9.	coast	1.3							0
	upland	3.8				0.3	0.3	0.8	1.1
10.	coast	1.6	1.3			204.4	204.4		205.6
	upland	3.5	0.3			2.3	2.3	1.1	3.7

only other coastal habitat that showed an increase in density was Transect 2, where some Wigeon were seen at the mouth of the Walking River.

Bird densities on lowland portions of Transects 1, 6 and 7 were lower than those seen on the first transect survey (mean 3.4 birds/km^2, SD=3.0, n=3). There was considerable variation in the densities seen on upland areas between the two surveys, but the average density was approximately the same (mean 4.5 birds/km^2, SD=4.6, n=10). The density on the upland portion of Transect 6 had increased, due to the sighting of several small flocks of shorebirds. However, shorebirds were not seen on Transect 7, and upland densities were much lower.

The potential number of birds present on the North Slope during the second transect surveys was also calculated (Table 6). A possible 29,000 birds were present, of which 67% were waterfowl. The biggest change occurred in sea ducks in the coastal habitat.

Table 6. Possible number of birds present on the North Slope, based on data from the second transect survey, 3 July 1985.

	Coast		Lowland		Upland	
	Waterfowl	All birds	Waterfowl	All birds	Waterfowl	All birds
Total number of birds seen	337	353	18	29	49	146
Area surveyed (Km^2)	5.6		7.6		39.1	
Density (birds/km^2)	60.2	63.0	2.4	3.8	1.3	3.7
Study area (Km^2)	250		350		3200	
Estimated total birds present	15000	16000	800	1300	4000	12000

The number of birds seen, and their calculated densities, on the return portion of the second transect survey, is shown in Table 7. The highest density was seen between Avadlek Spit and Catton Point (near the end of Transect 10). High densities of birds were also seen along Nunaluk Spit and Nunaluk Lagoon. Because of the difficulty of estimating the area of open water in this part of the survey, no extrapolations to potential total number of birds present have been made.

Table 7. Total number of birds, distances flown, and bird densities seen on the survey of 3 July, 1985, along the shore lead, Yukon North Slope.

Location	Total birds seen	Distance flown		Density birds/km^2
		Miles	Km	
Clarence Lagoon	28	4	6	11.7
Komakuk Beach	14	4	6	5.8
Nunalak Spit	779	16	25	77.9
Avadlek Spit - Catton Pt.	909	6	10	227.3
Catton Pt. - Stokes Pt.	155	10	16	24.2
Stokes Pt. - Shingle Pt.	70	52	83	2.1

Comparisons With Other Studies

The density of birds seen on transect surveys of the North Slope are within the range of the limited number of comparable studies conducted there. Schweinsburg (1974) estimated the density of birds on the delta of the Malcolm, Firth and Babbage rivers, 6 June 1971, to be 3.0 birds/km^2, 55% of which were waterfowl. On 17 July 1971, over a slighter larger area, he estimated the density to be 96.7 birds/km^2, 95% of which were waterfowl. Although it is not clear from his report, that change in density into July

appears to have resulted from sea ducks concentrating on the saltwater. It is not possible to determine the density of birds nesting on the upland, although it seems to be very low. Based on Schweinsburg's (1974) Figure 2 it appears his transects did include wetlands away from the coast, but the density of birds is not indicated. The average density of birds in the current study, seen throughout the study area, was 7.3 birds/km^2 for the first transect survey, and 10.1 birds/km^2 for the second transect survey. Waterfowl accounted for 35% and 67% of those densities, in the respective surveys. These densities, and the approximate timing of the surveys, fall between those of Schweinsburg.

Dickson (1985), working on the uplands south of King Point, calculated a density of 3.8 birds/km^2 within 8 km of the coast and 0.7 birds/km^2 between 8 and 25 km from the coast. Those surveys were conducted 19 June 1981. Waterfowl accounted for 64% of the sightings 2 km from the coast but only 32% 25 km from the coast. The 1985 survey revealed higher densities than those reported by Dickson in the King Point area (see Transect 5, Tables 3 and 5).

The present study found bird densities comparable to both Schweinsburg (1974) and Dickson (1985). Upland densities are low, but over the total area a potentially significant number of birds may be present . The most significant habitat is obviously the open water on the coast, with densities apparently declining farther inland. Even though these surveys were designed to look at the densities of birds that might be presumed to be breeding ,and were timed accordingly, the presence of non-breeding sea ducks on the salt water so early further attests to the importance of the coast for molting birds.

Future Surveys

In order to be able to detect trends in population abundance of birds using the North Slope, particularly waterfowl, both more intensive and

extensive studies will be required. Aerial sruveys should probably be increased to four in June, if a measure of annual variability in survey results is needed. The first survey should commence at about the time the first waterfowl arrive, and should be viewed as more or less a reconnaissance level survey. The final three surveys should be conducted within two days of each other, and should be conducted at the peak of nesting. More intensive work should occur on the ground, to accurately record the arrival of birds and the commencement of nesting. That information would be used to time the aerial surveys, and would also provide detailed information on habitat use. Ground based surveys could also be used to assess potential development impacts in specific locations.

Once a data base is obtained, in approximately 5 years, less frequent aerial surveys would suffice. The timing of surveys for best results would become based on past experience and predicted weather patterns. Single aerial surveys annually for a further 5 years would be required to be followed by monitor surveys at intervals of 3 years.

Difficulties Encountered

Some difficulties were encountered during the 1985 study, that should be taken into account in future surveys. The biggest problem was the weather, both seasonally and daily. In 1985 the spring was cold and late arriving on the North Slope, although it was near normal on the Mackenzie delta and points east (pers. com. various pilots working out of Inuvik). As a result it was difficult to time the surveys very well. The lateness of the spring also affected the birds. Many Oldsquaw, for example, never attempted to nest, but remained in loose flocks and exhibited mostly courtship behaviour. It will take several years of surveys therefore, to "average out" some of these error sources, before an assessment of population trends is possible.

Daily weather patterns also can present problems on different parts of

the North Slope. Offshore winds usually bring the best weather but they can make for very rough flying conditions. Offshore winds push the pack ice out, leaving variable amounts of open water near the coast. When the wind shifts around and comes onshore, across the open shore lead, fog is guaranteed.

Shifting winds must also be considered if a fuel cash for floatplanes is used near the coast. Without the proper wind conditions the packice may prevent landing anywhere near the cache.

Conducting aerial surveys from a camp on the North Slope, rather than basing them from Inuvik, is desireable. Ground work can be accomplished between aerial surveys and the camp position offers another source of weather information for timing surveys. Good radio communication with the aircraft base-of-operations is essential, however.

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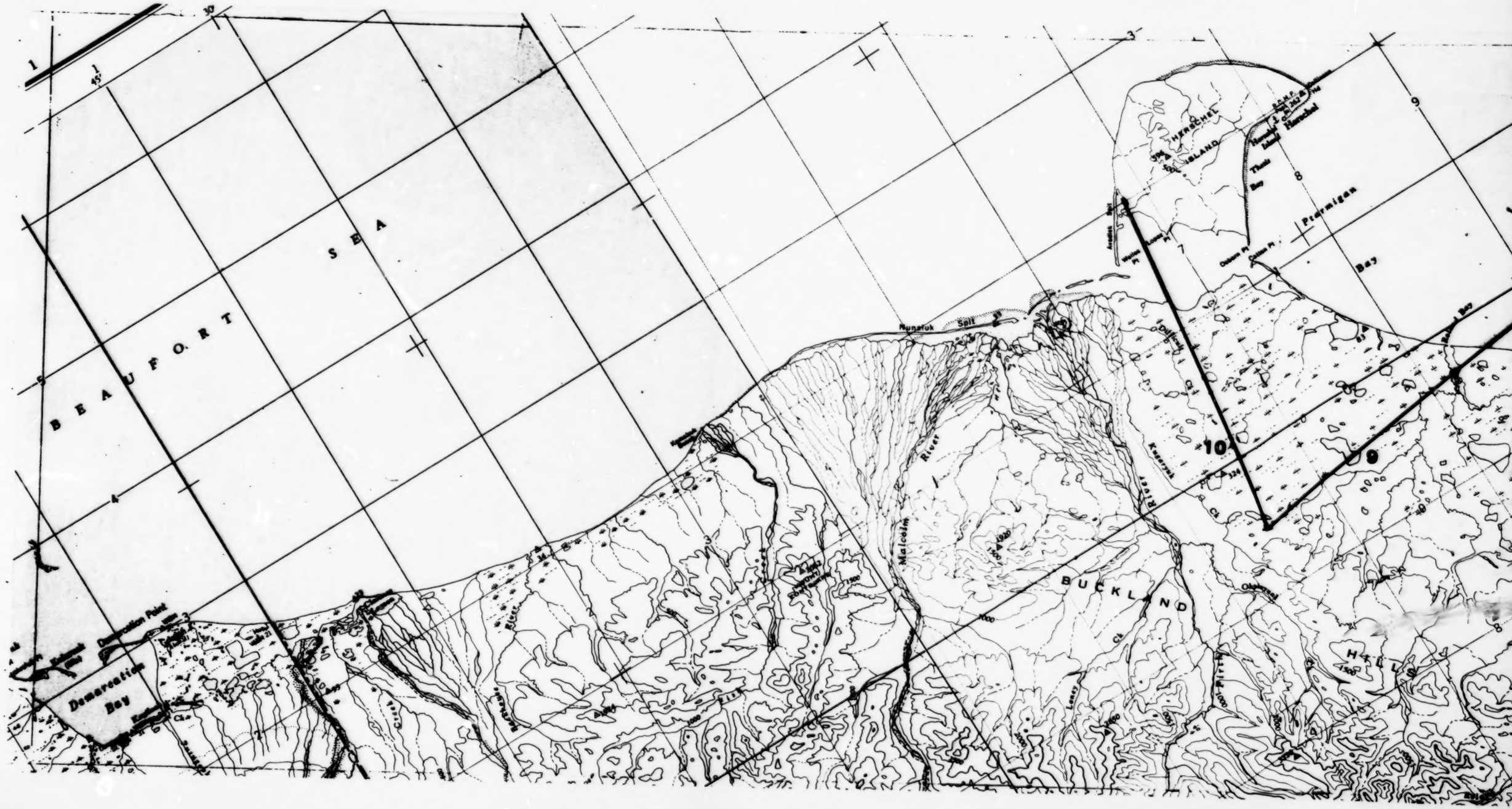
APPENDIX 1

Maps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Thetis Bay
Pitaqmigen
Bay
Kunaruk Spit
Malcolm River
BUCKLAND HILLS
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Demarcation Bay
Kogru River
Kuparuk River
Sakoonang River
Lewis Cr.
Ocean Pt.
Arctic Spit
Haynes Pt.
Lonely
Kogrukluk River
Cr.
Ck.

Scale of Kilometres

Miles 5 0 5 10 15 20 Miles

5 0 5 10 15 20 25 30

EH FH
EG FG

U.T.M. GRID ZONE DESIGNATION: 7W

U.T.M. GRID ZONE DESIGNATION: 8W

Pedmigan Bay

Herschel Island

HERSCHEL ISLAND

Phillips Bay

BARBAGE RIVER

BUCKLAND HILLS

Malcolm River

Kuparuk River

Colville River

Firth River

Babbage River

Blow River

Crossmore Creek

Scale of Kilometres

5 10 15 20 25 30

5 10 15 20 Miles

U.T.M. GRID ZONE DESIGNATION: 7W

U.T.M. GRID ZONE DESIGNATION: 8W

MACKENZIE BAY

Phillips Bay

Escape Reef

Trent Bay

Shoalwater Bay

Whitefish Station (locality)

Shingle Point

Kittigazuit

Tent Island

Cooper Island

Cape Bathurst

Cape Parry

Kittigazuit Bay

Cape Dalhousie

Cape Kellett

Baillie Islands

Cape Bexley

Cape Lyon

Cape Hearne

Cape Dalrymple

Cape Dalton

Cape Bunny

Cape Young

Cape Dolphin

Cape Barrow

Cape Krusenstern

Cape Bathurst

Cape Parry

Kittigazuit Bay

Cape Dalhousie

Cape Kellett

Baillie Islands

Cape Bexley

Cape Lyon

Cape Hearne

Cape Dalrymple

Cape Dalton

Cape Bunny

Cape Young

Cape Dolphin

Cape Barrow

Cape Krusenstern

APPENDIX 2

Tabulated Data

Table 2-1. Tablulated data from the reconnaissance survey of 17 June 1985, on the Yukon North Slope.

Species	Area* 1	2	3	4	5	6
loons			3			3
Aractic Loon			1	10	4	
Red-throated Loon			4			
Tundra Swan	165		3		13	2
Brant		60	20			
White Fronted Goose						
Canada Goose						1
Mallard	1					
Wigeon					2	
Pintail					10	
Teal						
dabblers	12					3
Scoter				3		
Surf Scoter			91			
Eider			3			
Common Eider						
Oldsquaw			1	1	5	7
Unidentified duck	12			2	36	1
Jaegar				1		
Tern	12		4	2	3	1
Mew Gull	1					
Glaucous Gull	5	12	26	9	38	1
gulls			50			
cranes	1					
small shorebirds						
large shorebirds						
Whimbrel						

* 1 Shallow Bay - Tent Island
2 Shoalwater Bay (Tent Is. - Blow R.)
3 Trent Bay (Blow R. - Walking R.)
4 Walking R. - King Pt.
5 King Pt. - Kay Pt. and Phillips Bay
6 Deep Cr. - Spring R.

Table 2-2. Tabulated data from the first transect survey (27 June) on the Yukon North Slope, 1985.

	Transect Number and Habitat*																			
	1		2		3	4		5		6			7		8		9		10	
Species	C	L	U	C	U	U	C	U	C	U	C	L	U	L	U	C	U	C	U	C	U
loons		1			2				2	1							1			1	
Arctic Loon		1			1						1			1			1				
Red-throated Loon						2															
Tundra Swan		4				2						4	2								
Brant		1																			
White Fronted Goose												10									
Canada Goose		3										2									
Mallard												4									1
Wigeon																					
Pintail		5										52									
Teal																					
dabblers																					
Scaup												2	5		10		2			1	
Scoter										8				4						4	
Surf Scoter										2				1							
White-winged Scoter																	1			1	
Eider																					
Common Eider																					
Oldsquaw		4	2			2						1					1		3	38	
Harlequin Duck																					
Unidentified ducks				2	2	6		3	1	1		7	1				3			20	
Jaegar					2	3						2	3		1						
Tern		2				11				6		1			1				2		2
Mew Gull																					
Glaucous Gull		2		1										5							
gulls		11																	4		
small shorebirds		2			1	1		1		3	1	4	10		36						4
large shorebirds						2															
Whimbrel								1		1											
Golden Plover					1	1									1						
Marsh Hawk										2											

* See map in Appendix 1 for transect locations. Letters indicate habitat types: C-coast; L-lowlands; U-uplands.

Table 2-3. Tabulated data from the second transect survey (3 July) on the Yukon North Slope, 1985.

	Transect Number and Habitat*																			
	1			2		3	4		5		6			7		8		9		10	
Species	C	L	U	C	U	U	C	U	C	U	C	L	U	L	U	C	U	C	U	C	U
loons						2		1													
Arctic Loon			2		6	4							1	3						2	1
Red-throated Loon				2		1								1		2					
Tundra Swan			5						3		12										
Brant																					
White Fronted Goose																					
Canada Goose																					
Mallard																					
Wigeon				10	2						4										
Pintail																					
Teal																					
dabblers																1					
Scaup			6		2			2								1				1	4
Scoter																				202	
Surf Scoter					1															101	
White-winged Scoter																					
Eider																				2	
Common Eider																					
Oldsquaw					1	3			1		1									21	4
Harlequin Duck																3					
Unidentified ducks					1	5		1						1	1	4		1			
Jaegar					1			1						2	3			2			
Tern									7							3					1
Mew Gull											1										
Glaucous Gull					1									3							
gulls																					
small shorebirds					2	3		1			34				1	4					1
large shorebirds											2										
Whimbrel						1			1												
Golden Plover																					
Marsh Hawk																					
Phallarope																1					2

* See map in Appendix 1 for transect locations. Letters indicate habitat types: C-coast; L-lowland; U-upland.

Table 2-4. Tabulated date from the return portion (CLarence Lagoon to Shingle Point) of the second transect survey (3 July) on the Yukon North Slope, 1985.

	Area*					
Species	1	2	3	4	5	6
loons			14	1	2	4
Arctic Loons	1				3	1
Red-throated Loon					3	
Trumpeter Swan			14			
Brant			1			
White-fronted Goose						
Canada Goose						
Mallard			10			
Wigeon						
Pintail						
Teal						
Dabblers						
Scaup			32			7
Scoter			205			
Surf Scoter			283	900	107	37
White-winged Scoter						
Eider	9	10			2	
Common Eider	5		65	1		
Oldsquaw	8		2		25	
unidentified ducks	1		85		4	6
Jaeger						
terns			9			1
Mew Gulls						
Glaucous Gulls	1	4	52		1	4
Gulls	3		5	7	8	10
Cranes			2			

* 1 Clarence Lagoon
2 Komakuk Beach
3 Nunaluk Spit
4 Avadlek Spit - Catton Point
5 Cattan Point - Stokes Point
6 Stokes Point - Shingle Point